DOCUMENT RESUME

ED 239 069 CE 037 896

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TITLE Barriers to Linkage of Vocational Education and Apprenticeship Programs: A Factor Analytic Study.
SPONS AGENCY State Univ. System of Florida, Tallahassee.
PUB DATE Apr 83
GRANT STAR-81-040
NOTE 53p.; For a related document, see CE 037 897. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Statistical Data (110)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Agency Cooperation; *Apprenticeships; Cooperative Programs; *Coordination; *Educational Cooperation; *Factor Analysis; Postsecondary Education; Secondary Education; *Vocational Education
IDENTIFIERS *Linkage

ABSTRACT

A study was designed to identify the underlying dimensions of the barriers and facilitators to the linkage of vocational education and registered apprenticeship programs. It was anticipated that knowledge of the factors derived from identified barriers and facilitators would provide assistance in the development of models designed to establish collaborative arrangements between the two agencies. Participants were involved at two points--as interviewees to identify potential barriers and facilitators to linkage and as respondents to a barriers and facilitators survey developed from interview results. Data were obtained from 46 vocational educators and apprenticeship personnel in the structured interviews and 288 on the survey. A factor analysis resulted in the identification of five orthogonally rotated factors. Comparison of these factors with hypothesized groupings showed considerable accuracy. The factors identified were labeled (1) apprenticeship selection process, (2) inadequacies of vocational education as preparation for apprenticeship training, (3) awareness of the functions of the other agency, (4) communication within and between agencies, and (5) deterrents created by the actors. (Twenty-one pages of tables are provided.) (YLB)

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BARRIERS TO LINKAGE OF VOCATIONAL EDUCATION AND APPRENTICESHIP PROGRAMS: A FACTOR ANALYTIC STUDY

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Current political and economic trends have recently produced calls for greater conservation of financial resources and the trimming of budgetary allocations among many governmental agencies. A major development in response to this situation has been the recognition given, on the part of policymakers, to the need for greater effectiveness and coordination in the delivery of service programs. As a result, both legislated and voluntary linkage of agencies has emerged which are designed to meet common goals and avoid duplication of services.

Efficient and efficient designs for linkage must take into account the complex and sometimes hidden problems which may emerge during the course of an exchange of resources and activities between agencies (Tindall, 1980). In this context, an attempt to identify potential barriers and facilitators to linkage between vocational education and apprenticeship programs takes on greater importance due to the historical lack of communication and cooperation between the two programs. Glover (1980) has observed that apprenticeship programs are often among the least understood systems of training in the United States. Apprenticeship sponsors have had a history of strong commitment to the essentially private character

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[1] Paper presented at the American Educational Research Association annual meeting, Montreal, April, 1983. This research was supported by Grant #3TAR 81-040 from the State University System of Florida.

of the system and have thereby tended to resist any form of government or outside intervention. An exclusionary policy has also tended to characterize the activities of vocational education programs in the past, resulting in diminished awareness and communication between these programs and the industrial sector (Glover, 1980).

According to a report by Maurice and Starr (1979), the probability of achieving successful linkage increases significantly when all parties to the arrangement systematically pursue the following lines of activity: 1) objectively evaluate their capacity for initially entering into a cooperative relationship; 2) recognize potential barriers which may impede cooperation; and 3) define some of the facilitative characteristics which can promote linkage. Given the nature of the exchange process and the potentially large number of problems which could hinder the efficiency and effectiveness of a cooperative relationship, the identification of potential barriers and facilitators becomes a critical consideration in the allocation of energy and resources.

Among these potential facilitative characteristics are: 1) the mutual understanding and awareness of relevant needs, resources, and objectives of each participant to the linkage relationship (Litwak and Hylton, 1962; Esterline, 1976; Levine and White, 1960; Maurice, 1982); 2) the possession of relevant organizational properties such as stability in formal structures and networks combined with flexibility and efficiency in the accomplishment of specified goals (Mojkowski and Gross, 1977); 3) effective leadership (Hage and Aiken, 1968); 4) systematic communication and information sharing (Pasmore, 1978), including the maintenance of formal information networks (Louis and Sieber, 1979); and 5) greater at-

tention to planning concerns and the development of specific procedural guidelines (Tindall, 1980).

In addition to the identification of various facilitative characteristics, numerous barriers to linkage have also been anticipated. These include: 1) budgetary allowances, funding and other cost factors (Rinehart, 1982); 2) organizational procedures, including corporate and institutional policies and practices (Rinehart, 1982; Starr, *et al.*, 1980); 3) legal, semantic and interpersonal barriers (Rinehart, 1982); 4) long-range planning considerations which may conflict with immediate linkage goals (Starr, *et al.*, 1980); and 5) the actual preparation and implementation of procedural guidelines for establishing linkages (Gross, 1977; Crandall, 1977; Hall and Hord, 1977).

The purpose of this study was to identify the underlying dimension of the barriers and facilitators to the linkage of vocational education and registered apprenticeship programs. It was anticipated that knowledge of the factors derived from identified barriers and facilitators would provide assistance in the development of models designed to establish collaborative arrangements between the two agencies.

Methods

Subjects. Participants were involved at two points in this study, first, as interviewees to identify the potential barriers and facilitators to linkage, and secondly, as respondents to a barriers and facilitators survey which was developed from the results of the structured interview.

A total of forty-six people, equally distributed over the five vocational education regions and seven apprenticeship regions, were initially

interviewed. That sample was comprised of the following representatives: six Bureau of Apprenticeship Training representatives, five apprenticeship committee members; four apprenticeship instructors, six apprentices; three state vocational education administrators; ten vocational education directors; five occupational specialists; and two vocational education students.

A purposive sample of 288 was surveyed to verify the identified barriers and facilitators resulting from the previous interviews. The survey sample, which included 19 of the original 46 interviewees, was comprised of the following representatives who are uniformly distributed over the respective vocational education and apprenticeship regions: 15 state vocational representatives; 38 vocational education directors; 19 vocational education occupational specialists; 49 vocational education instructors; 15 representatives from the Bureau of Apprenticeship Training; 72 apprenticeship committee members; and 70 apprenticeship instructors.

Instruments. The instruments employed were structured interview and a survey of barriers. Items included on the survey were written to reflect six dimensions of the construct to linking of vocational education and apprenticeship programs. These dimensions were: a) selecting apprentices, b) administrative relationship instruction in vocational education, c) advanced credit, d) awareness and communication, and e) characteristics of apprenticeship and vocational education programs. Factor analysis was employed to determine the extent to which the hypothesized dimensions were reflected by the data collected.

Data Source

As noted above, data employed in the analysis were obtained from a purposive sample of vocational educators and apprenticeship personnel.

The data from the 79-item survey of barriers was submitted to the factor analysis.

Results

The factor analysis resulted in the identification of five orthogonally rotated factors. The five-factor solution was selected because additional factors appeared to be meaningless.

The factors thus derived were compared to the dimensions for which items were written. This comparison indicated that the hypothesized groupings possessed considerable accuracy. However, the regrouping of some items with other factors provided additional clarity to the nature of the underlying constructs.

Factors, their labels, and the items that loaded greater than .300 are presented in Table 1. As may be noted from Table 2, most items loaded above .300 on only one factor. In a case where an item loaded on more than one factor, it was assigned to the factor on which it loaded the highest. Three items of the 79 did not load above .300 on any factor.

Factor 1 includes items that reflect the restrictive nature of apprenticeship training. The predominate element of restriction is the process used for selecting apprentices. Items in this element reflect both the limited number of apprentices as well as the artificial barriers that are provided by apprenticeship personnel. Items such as "Apprenticeship personnel intentionally limit apprenticeship completions in order to limit the supply of trained workers" and "The process of selecting registered apprentices is often conducted at a time of year that requires high school graduates to wait for nearly a year after graduation before they can apply" are representative of this element. A secondary element

TABLE 1

Factors that Deter or Facilitate the Linkage
of Vocational Education and Apprenticeship Programs

FACTOR	ITEM	FACTOR LOADING
1. Apprenticeship selection process	5. The process of selecting registered apprentices provides a way for keeping the labor market narrow.	764
	45. apprenticeship personnel intentionally limit apprenticeship completions in order to limit the supply of trained workers.	761
	46. joint apprenticeship committees are influenced by traditions which may hinder cooperative relationships with vocational education.	662
	28. apprenticeship committees would prefer not to give credit because it is more cost effective to have an apprentice indentured for the maximum tenure.	660
	76. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: apprenticeship committees	621
	79. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the Bureau of Apprenticeship	606
	61. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the process for selecting apprentices.	602

FACTOR	ITEM	FACTOR LOADING
1. Apprenticeship selection process (continued)	77. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: apprenticeship instructors.	590
	71. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: communication between the Bureau of Apprenticeship and apprenticeship personnel.	586
	20. Instruction in vocational education: prepares students for work, thereby making apprenticeship unnecessary.	570
	6. The process of selecting registered apprentices: limits the entry of younger applicants	569
	67. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: apprenticeship instructors.	559
	3. The process of selecting registered apprentices: is often conducted at a time of the year that requires high school graduates to wait for nearly a year after graduation before they can apply.	552
	4. The process of selecting registered apprentices: affords no preference for prior training in vocational education.	547
	41. apprenticeship personnel are resistant to change.	541

FACTOR	ITEM	FACTOR LOADING
1. Apprenticeship selection process (continued)	69. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: communication by apprenticeship personnel within apprenticeship programs.	533
	37. there is a lack of communication between vocational education and the Bureau of Apprenticeship regarding vocational education.	519
	39. apprenticeship personnel like to remain independent of the influence of vocational education	499
	1. The process of selecting registered apprentices: favors those who have a friend or relative in the trades.	487
	26. The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: apprenticeship committees prefer the untrained applicant who can be trained their way.	472
	43. apprenticeship personnel try to exert too much control on vocational education	468
	2. The process of selecting registered apprentices: is often not communicated to the vocational education student.	457
	44. the relationship between joint and non-joint apprenticeship programs creates a barrier for linking vocational education and apprenticeship programs.	445

FACTOR	ITEM	FACTOR LOADING
1. Apprenticeship selection process (continued)	65. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the issue of advanced credit in apprenticeships.	431
	70. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: communication between the Bureau of Apprenticeship and vocational education personnel.	427
	47. guidance counselors steer the "better" students away from vocational education	380
2. Inadequacies of vocational education as preparation for apprenticeship training	18. Instruction in vocational education: prepares students for non-existent jobs.	734
	64. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the type of student who completes vocational education.	697
	63. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the type of instruction currently received in vocational education.	658
	22. Instruction in vocational education: includes students who are low in scholastic ability and would therefore not make good apprentices.	621

FACTOR	ITEM	FACTOR LOADING
2. Inadequacies of vocational education as preparation for apprenticeship training (continued)	19. Instruction in vocational education: leaves its students with the impression that they are qualified for jobs for which they are not.	620
	13. Instruction in vocational education: is outdated theoretically.	617
	17. Instruction in vocational education: cannot prepare a student for job entry, but prepares students to be trained helpers.	616
	15. Instruction in vocational education: employs instructors with little practical experience.	574
	16. Instruction in vocational education: is largely theoretical as opposed to "hands on".	574
	29. The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: a year in vocational education is not worth a year as an apprentice.	574
	21. Instruction in vocational education: includes students who are often immature and would therefore not make good apprentices.	547
	12. Instruction in vocational education: develops only general work skills.	528
	14. Instruction in vocational education: is limited by outdated equipment.	520

FACTOR	ITEM	FACTOR LOADING
2. Inadequacies of vocational education as preparation for apprenticeship training (continued)	54. It would be beneficial if: apprenticeship programs were made mandatory.	487
	27. The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: credit should only be given for past work experience (rather than related job training), which can facilitate present job productivity as an apprentice.	464
	49. It would be beneficial if: vocational education were to raise its entry standards and only admit the more competent students.	453
	9. The exchange of monies and services between registered apprenticeship programs and vocational education is a barrier to these groups having a close working relationship because of: the way vocational education distributes funds earned through apprenticeship instruction.	434
	25. The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: apprenticeship committees do not want to give credit for training based on theory rather than practical experience.	316
	8. The exchange of monies and services between registered apprenticeship programs and vocational education is a barrier to these groups having a close working relationship because of: the procedures used by vocational education to select and certify apprenticeship instructors.	313

FACTOR	ITEM	FACTOR LOADING
2. Inadequacies of vocational education as preparation for apprenticeship training (continued)	23. The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: contractors can't afford it.	304
3. Awareness of nature and function of other agency	33. there is a lack of communication among vocational educators concerning apprenticeships	677
	32. vocational educators do not communicate with industry regarding curriculum planning.	661
	34. there is lack of communication among vocational educators concerning apprenticeships.	653
	10. The exchange of monies and services between registered apprenticeship programs and vocational education is a barrier to these groups having a close working relationship because: a lack of awareness by apprenticeship personnel concerning funding of vocational programs for apprentices.	542
	40. vocational education personnel are resistant to change.	515
	31. apprenticeship committees lack understanding of vocational education.	505
	62. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the administrative relationship which presently exists between registered apprenticeship programs and vocational education.	498

FACTOR	ITEM	FACTOR LOADING
3. Awareness of nature and function of other agency (continued)	36. there is a lack of communication between vocational education and the Bureau of Apprenticeship regarding apprenticeship programs.	490
	30. vocational educators lack understanding of apprenticeship programs.	460
	35. apprenticeship personnel fail to conduct awareness activities for vocational education staff and students.	441
	38. vocational education personnel like to remain independent of the influence of apprenticeship programs.	408
	42. vocational educators try to exert too much control on apprenticeship programs.	406
	11. The exchange of monies and services between registered apprenticeship programs and vocational education is a barrier to these groups having a close working relationship because of:	384
4. Communication within and between agencies	58. It would be beneficial if: apprenticeship committee members were on vocational education and apprenticeship committees.	687
	59. It would be beneficial if: apprenticeship committees provided feedback to vocational education concerning the progress of vocational education students who became apprentices.	526

FACTOR	ITEM	FACTOR LOADING
4. Communication within and between agencies (continued)	60. It would be beneficial if: vocational educators would more often solicit ideas and input from industry concerning current needs, trends, and equipment.	508
	68. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: communication within particular school systems or vocational technical settings.	483
	52. It would be beneficial if: vocational educators were more aware of apprenticeship programs, and the kind of workers needed in industry.	469
	56. It would be beneficial if: apprentices' entry level could be clearly identified, thereby assuring appropriate placement in the apprenticeship program.	448
	53. It would be beneficial if: the Bureau of Apprenticeship would assume responsibility in establishing closer ties between vocational education and apprenticeship programs.	441
	66. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: the understanding that vocational education has of apprenticeship and the understanding apprenticeship has for vocational education.	430

FACTOR	ITEM	FACTOR LOADING
4. Communication within and between agencies (continued)	51. It would be beneficial if: apprenticeship committees would make parents of vocational education students aware of apprenticeship opportunities.	394
	57. It would be beneficial if: more pre-apprenticeship programs were jointly developed by vocational education and apprenticeship committees.	391
	50. It would be beneficial if: graduating vocational education students were better prepared in the basic skills.	345
5. Deterrents created by the actors	73. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: vocational education instructors.	692
	74. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: vocational education students.	627
	72. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: vocational education directors.	608
	78. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: industry.	576

FACTOR	ITEM	FACTOR LOADING
5. Deterrents created by the actors (continued)	75. Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs: vocational education guidance counselors or occupational specialists.	450
	48. the Bureau of Apprenticeship and Training is essential for developing and/or maintaining a positive relationship between vocational education and apprenticeship programs.	334

TABLE 2

Varimax Rotated Factor Matrix
for Five Factors

ITEM	FACTOR 1	2	3	4	5
The process of selecting registered apprentices:					
1. favors those who have a friend or relative in the trades.	487	-306	071	197	132
2. is often not communicated to the vocational education student.	457	-168	229	257	194
3. is often conducted at a time of the year that requires high school graduates to wait for nearly a year after graduation before they can apply.	552	114	-003	130	117
4. affords no preference for prior training in vocational education	547	-266	012	-010	-080
5. provides a way for keeping the labor market narrow.	764	-210	043	034	021
6. limits the entry of younger applicants.	569	-260	-097	-050	021
7. is affected by the economy and the job market.	222	075	-144	252	017

ITEM	FACTOR 1	2	3	4	5
The exchange of monies and services between registered apprenticeship programs and vocational education is a barrier to these groups having a close working relationship because of:					
8. the procedures used by vocational education to select and certify apprenticeship instructors.	141	313	297	-108	304
9. the way vocational education distributes funds earned through apprenticeship instruction.	043	434	384	-126	235
10. a lack of awareness by apprenticeship personnel concerning funding of vocational programs for apprentices.	167	158	542	037	050
11. problems concerning the allotment and use of materials for apprenticeship classes in vocational facilities.	292	233	384	-063	118
Instruction in vocational education:					
12. develops only general work skills.	-172	528	278	052	111
13. is outdated theoretically.	-121	617	348	018	077
14. is limited by outdated equipment.	181	520	266	-016	051
15. employs instructors with little practical experience.	-263	574	280	-040	094

ITEM	FACTOR 1	2	3	4	5
Instruction in vocational education: (continued)					
16. is largely theoretical as opposed to "hands on".	-182	574	099	033	029
17. cannot prepare a student for job entry, but prepares students to be trained helpers.	-333	616	190	-047	-016
18. prepares students for non-existent jobs.	-091	734	233	226	-028
19. leaves its students with the impression that they are qualified for jobs for which they are not.	-301	620	302	154	137
20. prepares students for work, thereby making apprenticeship unnecessary.	570	-249	036	-204	-079
21. includes students who are often immature and would therefore not make good apprentices.	-151	547	015	012	088
22. includes students who are low in scholastic ability and would therefore not make good apprentices.	-150	621	-024	092	-018
The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because:					
23. contractors can't afford it.	026	304	171	-239	-181
24. industry personnel want to make their own decisions regarding credit.	128	230	079	274	-054

ITEM	FACTOR 1	2	3	4	5
The granting of advanced credit in apprenticeship programs for training received in vocational education is an issue because: (continued)					
25. apprenticeship committees do not want to give credit for training based on theory rather than practical experience.	219	316	053	037	-287
26. apprenticeship committees prefer the untrained applicant who can be taught their way.	472	022	125	-106	-105
27. credit should only be given for past work experience (rather than related job training), which can facilitate present job productivity as an apprentice.	-055	464	-073	-127	-050
28. apprenticeship committees would prefer not to give credit because it is more cost effective to have an apprentice indentured for the maximum tenure.	660	-139	101	-122	-109
29. a year in vocational education is not worth a year as an apprentice.	-454	574	-095	145	012
(Items 30 through 48 were unprefaced by collective stem(s) and stand as discrete items.)					
30. vocational educators lack understanding of apprenticeship programs.	-146	432	460	110	220
31. apprenticeship committees lack understanding of vocational education.	285	-260	505	070	131

ITEM	FACTOR 1	2	3	4	5
32. vocational educators do not communicate with industry regarding curriculum planning.	-138	363	661	213	-077
33. there is a lack of communication among vocational educators regarding apprenticeship programs.	086	228	677	226	039
34. there is a lack of communication among vocational educators concerning apprenticeships.	083	200	653	212	121
35. apprenticeship personnel fail to conduct awareness activities for vocational education staff and students.	384	-369	441	074	140
36. there is a lack of communication between vocational education and the Bureau of Apprenticeship regarding apprenticeship programs.	387	-054	490	305	124
37. there is a lack of communication between apprenticeship committees and the Bureau of Apprenticeship regarding vocational education.	519	-228	342	088	104
38. vocational education personnel like to remain independent of the influence of apprenticeship personnel.	-032	237	408	099	-037
39. apprenticeship personnel like to remain independent of the influence of vocational education.	499	-101	150	109	-001
40. vocational education personnel are resistant to change.	-096	212	515	040	-050

ITEM	FACTOR 1	2	3	4	5
41. apprenticeship personnel are resistant to change.	541	-249	048	-103	-046
42. vocational educators try to exert too much control on apprenticeship programs.	-211	220	406	-147	199
43. apprenticeship personnel try to exert too much control on vocational education.	468	077	196	-094	-151
44. the relationship between joint and non-joint apprenticeship programs creates a barrier for linking vocational education and apprenticeship programs.	445	-069	197	120	054
45. apprenticeship personnel intentionally limit apprenticeship completions in order to limit the supply of trained workers.	761	-158	-078	-054	-003
46. joint apprenticeship committees are influenced by traditions which may hinder cooperative relationships with vocational education.	662	-207	092	022	048
47. guidance counselors steer the "better" students away from vocational education.	380	077	-143	270	-050
48. the Bureau of Apprenticeship and Training is essential for developing and/or maintaining a positive relationship between vocational education and apprenticeship programs.	-239	-096	047	299	334

ITEM	FACTOR 1	2	3	4	5
It would be beneficial if: (continued)					
57. more pre-apprenticeship programs were jointly developed by vocational education and apprenticeship committees.	134	-125	249	391	090
58. apprenticeship committee members were on vocational education and apprenticeship committees.	-126	-072	116	687	135
59. apprenticeship committees provided feedback to vocational education concerning the progress of vocational education students who became apprentices.	119	144	287	526	-067
60. vocational educators would more often solicit ideas and input from industry concerning current needs, trends, and equipment.	-163	175	191	508	016
Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs.					
61. the process for selecting apprentices.	602	-129	-019	-019	-241
62. the administrative relationship which presently exists between registered apprenticeship programs and vocational education.	311	113	498	140	142
63. the type of instruction currently received in vocational education.	-294	658	208	095	128

ITEM	FACTOR 1	2	3	4	5
It would be beneficial if:					
49. vocational education were to raise its entry standards and only admit the more competent students.	-237	453	052	061	-035
50. graduating vocational education students were better prepared in the basic skills.	-273	330	035	345	-073
51. apprenticeship committees would make parents of vocational education students aware of apprenticeship opportunities.	-125	-040	105	394	-052
52. vocational educators were more aware of apprenticeship programs, and the kind of workers needed in industry.	051	113	-055	469	191
53. the Bureau of Apprenticeship would assume responsibility in establishing closer ties between vocational education and apprenticeship programs.	049	-060	147	441	433
54. apprenticeship programs were made mandatory.	-179	487	089	100	153
55. a greater variety of apprenticeship programs were established.	-112	226	-052	212	-131
56. apprentices' entry level could be clearly identified, thereby assuring appropriate placement in the apprenticeship program.	248	119	057	448	-168

ITEM	FACTOR 1	2	3	4	5
Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs. (continued)					
64. the type of student who completes vocational education.	-042	697	076	011	086
65. the issue of advanced credit in apprenticeships.	431	173	-097	077	044
66. the understanding that vocational education has of apprenticeship and the understanding apprenticeship has for vocational education.	400	-013	184	430	223
67. communication between vocational education and apprenticeship programs.	559	-020	102	434	171
68. communication within particular school systems or vocational technical settings.	406	056	-080	483	212
69. communication by apprenticeship personnel within apprenticeship programs.	533	-125	-083	195	197
70. communication between the Bureau of Apprenticeship and vocational education personnel.	427	-195	213	326	299
71. communication between the Bureau of Apprenticeship and apprenticeship personnel.	586	-277	003	-079	230

ITEM	FACTOR 1	2	3	4	5
Indicate the degree to which you agree or disagree that each of the following represents a barrier to linking vocational education and apprenticeship programs. (continued)					
72. vocational education directors.	-055	113	318	057	608
73. vocational education instructors.	-009	200	261	021	692
74. vocational education students.	216	405	-105	036	627
75. vocational education guidance counselors or occupational specialists.	027	242	177	161	450
76. apprenticeship committees.	621	-091	-039	138	407
77. apprenticeship instructors.	590	-082	004	-038	520
78. industry.	427	037	-039	027	576
79. the Bureau of Apprenticeship	606	-184	-061	-027	385

included in Factor 1 is found in items that reflect the belief by apprenticeship personnel that training offered in a mode other than apprenticeship is inadequate. Items 4, "The process of selecting registered apprentices affords no preferences for prior training in vocational education," and 37, "There is a lack of communication between vocational education and the Bureau of Apprenticeship regarding vocational education" are exemplary of this element. Thus, it appears that the construct that underlies this factor is the belief that skill training should be offered to a limited number of entrants and that the only training that is of value is that which is obtained after the person has begun working. The Factor was entitled, "Apprenticeship Selection and Training."

Items included in Factor 2 are nearly all focused on the inadequacies of vocational training as preparation for entry into work or apprenticeship training. These items reflect that vocational education is offered to the wrong students, *e.g.*, item 22--"Instruction in vocational education includes students who are low in scholastic ability and would therefore not make good apprentices," includes the wrong content; *e.g.*, item 18--"Instruction in vocational education prepares students for non-existent jobs";and lacks sufficient depth, *e.g.*, item 12--"Instruction in vocational education develops only limited work skills." The Factor was labeled, "Inadequacies of Vocational Education as Preparation for Apprenticeship Training."

Factor 3, labeled "Awareness of Nature and Function of Other Agencies," includes items which depict the two agencies as not communicating with each other, *e.g.*, item 32--"Vocational educators do not communicate with indus-

try regarding curriculum planning"; items which depict the two agencies as not understanding the other, *e.g.*, item 31--"Apprenticeship committees lack understanding of vocational education"; and items which depict the two agencies as failing to do anything about enlightening the other, *e.g.*, item 35--"Apprenticeship personnel fail to conduct awareness activities for vocational education staff and students."

The items included in Factor 4 are the facilitators to linkage of vocational education and apprenticeship that were included on the instrument. This Factor is dominated, especially those with higher loadings, by items concerning the desirability of the personnel in the two agencies to communicate on a variety of points. Among these points are: 1) the desirability of feedback on the progress of former vocational education students being provided by apprenticeship committees, 2) vocational education obtaining input from industry, and 3) each agency understanding the other. The Factor was labeled, "Communication within and between Agencies."

The instrument included a listing of actors who may, in the perception of other actors, provide a barrier to linking the two agencies. The factor analysis grouped these items in Factor 5. The items loading above .300 included the various actors that would be involved, should a linkage be attempted. It appears that this Factor, which was dubbed, "Deterrents Created by the Actors," reflects that it is the other person who is the problem.

Conclusions

The factors appear to reflect the differences in philosophy of the two agencies. One makes an attempt to be open to all students, while the other attempts to restrict the entrance of skilled workers into the job

market. This difference in philosophy is a source of conflict between members of the two agencies. Miller (1958) indicates that congruence in philosophy is an asset to the development of collaborative arrangements. Given that the philosophies are not likely to change rapidly, it is essential that the actors develop an understanding and appreciation of other actors' philosophies and look for commonality of agency goals rather than differences (Gold, 1980). However, Banathy (1978) suggests that minor conflicts will often serve as a catalyst to opening lines of communication between linkage partners. The problem of communication is an underlying construct in the factor structure, which may explain much of the negative perception that personnel in one agency has of the other. The lack of awareness of the other agency or of any attempt to communicate, the construct included in Factor 3, is also reflected in the Factor which includes the facilitators, *i.e.*, Factor 4. Thus, it appears that communication and awareness are the problems, and communication is the solution.

Starr, *et al.* (1980), indicate that communication is a basic necessity for agency linkage. They also note that mutual respect, confidence, and trust are requisites to successful linkage. Thus, it appears that the place to start developing linkage arrangements is to open the channels of communication, including each agency's informing the other agency of its function. This should lead to domain consensus and thus begin to build trust and erode the perception that the other actors are the problem.

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